REEL # 8

FEDORCHENKO, I.M

2/2 071 UNCLASSIFIED PROCESSING DATE--[illegible]70

CIRC ACCESSION NO--AP0119351

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY IS MADE OF THE POSSIBILITY OF PRODUCING A POROUS ALUMINUM SKELETON WHICH WOULD PERMIT MANUFACTURE OF A METAL CERAMIC ANTIFRICTION MATERIAL. THE DEVELOPMENT OF A PRODUCTION PROCESS FOR POROUS ALUMINUM FROM ALUMINUM AND SODIUM CHLORIDE POWDERS OF 0.1-0.3 AND 0.1-0.2 MM PARTICLE SIZE, RESPECTIVELY, IS DESCRIBED. PELLETS WERE SINTERED IN ACCORDANCE WITH UNITED STATES PATENT NO 3276867. PELLET SINTERING QUALITY WAS DETERMINED BY MEASURING THE IMPACT DUCTILITY, HARDNESS, AND STRENGTH AT CUTOFF. THE MECHANICAL PROPERTIES OF THE CERMET ALUMINUM ARE SHOWN TO BE COMPARABLE TO THOSE OF A FILLED FLUORINE PLASTIC. THIS WILL MAKE IT POSSIBLE TO USE ALUMINUM NOT ONLY AS A HEAT TRANSFER AGENT, BUT AS A SUPPORTING SKELETON FOR METAL FLUORINE MATERIALS. ANTIFRICTION TESTS CONDUCTED IN AIR AND IN VACUUM (2 TIMES 10 PRIME NEGATIVE5 TO 5 TIMES 10 PRIME NEGATIVE6 MM HG) ON SAMPLES WITH A 50PERCENT POROSITY IMPREGNATED WITH FLUORINE PLASTIC 4, FILLED WITH GRAPHITE, LEAD, AND MOLYBDENUM SULFIDES, SHOWED THE POSSIBILITY OF THEIR USE AT SPEEDS UP TO 0.25 M-SEC AND AT PRESSURES UP TO 10 KG-CM PRIME2. ORIGINAL ARTICLE HAS 3 TABLES.

UNCLASSIFIED

UDC 539.3:534.1

USSR

FEDORCHENKO, I. S.

"Numerical Solution of Problems on the Stability of Triple Layer Cylindrical Shells"

Mat. fizika. Resp. mezhved. sb. (Mathematical Physics. Republic Interdepartmental Collection), 1972, No. 12, pp 150-161 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V294)

Translation: The numerical solution of the stability equations for triple layer cylindrical shells is discussed on the basis of the Grigolyuk-Chulkov equations (see Grigolyuk, E. G., Chulkov, P. P., Kriticheskiye nagruzki trekhslovnykh tsilindricheskikh i konicheskikh obolochek (Critical Loads of Triple Layer Cylindrical and Conical Shells), Novosibirsk, Eastern Siberian Book Publishing House, 1966 -- RZhMekh, 1967, Abstract No 5V157 K). Computational formulas for determining critical loads of freely supported triple layer cylindrical shells are obtained with the aid of the total representations method of G. N. Polozhiy. Under boundary conditions different from free support the problem is reduced to finding the roots of a characteristic determinant. A numerical example is given. Author's abstract.

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USSR UDC 53.07/.08+53.001.5

BOYKO, G. I., POPOV, V. P., FEDORCHENKO, S. N.

"A Sensitive, Stable Differential Voltage Pulse Discriminator"

Tr. Soyuzn. NII priborostr. (Works of the Union Scientific Research Institute of Instrument Building), 1971, vyp. 16, pp 43-55 (from RZh-Fizika, No 4, Apr 72, Abstract No 4A576)

Translation: A description is given of the circuitry and experimental characteristics of a differential discriminator with conversion of the input voltage pulse to current. The discriminator has fairly good stabilization of discrimination levels and width of channels as well as high resistance to amplitude and frequency overloads. The temperature instability of the discrimination level and channel width is calculated. The discriminator has 50 discrimination levels and 10 channel widths from 50 to 500 mv with discrete setting. The integral nonlinearity of the amplitude characteristic is no more than 1%, and the differential nonlinearity is no more than ±4%. The instability of discrimination levels with a change in temperature by ±20°C from the normal is no more than ±1.2 mv/10°C, and the change in channel width is no more than ±1.5 mv/10°C with regard to

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BOYKO, G. I. et al., Tr. Soyuzn. NII priborostr., 1971, vyp. 16, pp 43-55

measurement error. The resolving time of the circuit is no more than 1 μs. The reference signal is displaced by no more than a single channel with a change in the frequency of statistically distributed signals from 10^3 to 10^5 pulses per second. Resumé.

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USSR UDC 669.245'28:669.245'27

FEDORCHENKO, V. I., AVERIN, V. V., and SAMARIN, A. M. (deceased), Moscow

"Effect of Titanium on Nitrogen Solubility and Activity in Ni-Mo and Ni-W Alloys"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 3, May-Jun 71, pp 73-77

Abstract: An investigation was made of the thermodynamics and kinetics of the interaction between nitrogen and Ni-Mo and Ni-W alloys containing titanium in order to determine the effect of titanium on the behavior of nitrogen in alloys. The nitrogen solubility in Ni+20at% Mo and Ni+20at%W alloys with a titanium content from 0 to 2.28 wt% and from 0-1.65wt%, respectively, was determined at 1600° C as a function of pressure. The results show that the formation of titanium nitride in Ni-W alloys takes place at lower pressure values and titanium concentrations than in Ni-Mo alloys. This is governed by increased titanium activity in Ni-W in comparison with the Ni-Mo alloy. The linear dependence of nitrogen solubility on the square root of the pressure attests to the fact that in alloys containing a nitride forming element, nitrogen solubilizes in monatomic form. A formula is derived for determining the nitrogen activity coefficient f_n, and its dependence on titanium concentration is plotted in lfg_n-Ti% coordinates.

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USSR UDC 669.27'.87.051

OBOLONCHIK, V. A., PROKOSHINA, L. M., and FEDORCHENKO, V. P.

"Production and Some Physicochemical Properties of Selenides of Transition Metals"

V sb. Khal'kogenidy (Chalcogenides--collection of works), Vyp 2, Kiev, "Naukova Dumka", 1970, pp 130-141 (from RZH-Metallurgiya, No 11, Nov 70, Abstract No 11G162)

Translation: Results are presented of an investigation of the technology of producing diselenides (D) with the help of the interaction of metallic powders of transition metals, and also of their oxides and salts with H_2Se and Se vapors in an Ar stream. The technological regimes of D production are shown. Investigation is conducted of the thermal stability of Nb and W D in an Ar stream, and of their electrophysical properties. The experimental data attest to the metallic nature of the conductivity of Ti and Nb D and semiconducting properties of Mo, W, and Zr D. 5 ill., 3 tables, 17 bibl. entries.

S. Krivonosova

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USSR UDC 669.295:620.193

FEDORCHUK, N. M., and IGNATOV, D. V., Moscow

"Oxidizability of Beta-Titanium Alloys and Their Protection From Gas Corrosion"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 72, pp 66-69

Abstract: A study was made of the oxidation kinetics of AN-5 titanium alloy (Ti-Nb-Mo-Cr, containing almost 52 wt% Ti) and IVT-1 titanium alloy (7% Mo+5.5% Cr+3% Fe+3% Al) with and without an aluminum coating under conditions of heating in air to 700-1200°C. It was established that there is intensive oxidation of the alloys at the phase transformation temperatures and that the average oxidation rate of samples coated with aluminum is significantly decreased where, for example, the oxidation rate of coated samples of AN-5 alloy is 14-20% less than that of nichrome in the 700-1000°C interval. The aluminum coating on AN-5 alloy completely eliminates the effect of the beta-solid solution decomposition on the oxidation rate of the sample in the 700-900°C interval. Graphic data show that both uncoated alloys begin oxidizing at a measureable rate at 700°C and then begin oxidizing at a rapid rate. AN-5 alloy reaches a peak oxidation rate (extrapolated) of slightly more than 3 $mg/cm^2/hr$ just about 900°C; then the rate falls sharply to 0.5 $mg/cm^2/hr$

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FEDORCHUK, N. M., and IGNATOV, D. V., Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 72, pp 66-69

at 1100°C where the oxidation starts to increase with increasing temperature. IVT-1 uncoated alloy reaches a maximum oxidation rate of 2.5 mg/cm^2/hr at about 1025°C. The maximum oxidation rate of coated AN-5 was 0.1+mg/cm^2/hr at 1200°C, and a measurable rate was not detected until 950°C, while the oxidation rate for coated IVT-1 was 0.2 mg/cm^2/hr at 1000°C. Two figures, 6 bibliographic references.

1/2 040 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--USE OF ARC DISCHARGE IN AN INERT GAS ATMOSPHERE -U-

AUTHOR-(02)-KARPEL, N.G., FEDORCHUK, O.K.

F

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 418-22

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ARC DISCHARGE, INERT GAS, GALLIUM ARSENIDE, SILICON CARBIDE, VAPOR PRESSURE, IMPURITY LEVEL, EMISSION SPECTRUM, LINE INTENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1194 STEP NO--UR/0075/70/025/003/0418/0422

CIRC ACCESSION NO--AP0124848

UNCLASSIFIED

2/2 040 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124848

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE USE OF AN ARC DISCHARGE IN AN INERT GAS ATM. WAS EXAMD. TO DET. ADMIXTS. IN PURE MATERIALS. AFTER STUDYING GAAS AND SIC, A QUANT. RELATION WAS ESTABLISHED BETWEEN CHANGES OF THE LINE INTENSITY FOR A NO. OF ELEMENT ADMIXTS. AND THE VAPOR PRESSURE AND IONIZATION DEGREE OF THESE ELEMENTS ON THE REPLACEMENT OF THE AIR ATM. BY A HE ATM. THE USE OF AN INERT ATM. CAN INCREASE THE SENSITIVITY 2-3 FOLD, ONLY WHEN THE INTENSIVE BACKGROUND INTERFERES WITH THE DETN. OF ADMIXTS. IN THE AIR ATM.

UNCLASSIFIED

USSR

UDC 621.382.002

GARBER, R.I., [illegible], A.K., KOZLOV, V.F., LISENKO, V.A., FOGEL', Ya.M.,
FEDORENKO, A.I.

"Mass Spectrometric Determination Of Impurity Profile Of Boron In Ion-Doped Single Crystals Of Silicon"

V sb. Radiats. fiz. nemet.kristallov. (Radiations Physics Of Nonmetallic Crystals--Collection Of Works), Vol 3, Part 2, Kiev, "Nauk.dumka," 1971, pp 143-148 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B458)

Translation: The impurity profile of atoms of boron implanted in monocrystalline silicon with various orientations was determined by the method of secondary ion-ionic emission. The scheme of the mass spectrometric arrangement is presented, as well as typical impurity profiles of barium in Si specimens. 3 ill. 7 ref. I.M.

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UDC 621.382.002

GARBER, R.I., GVERDTSITELI, I.G., GNAP, A.K., GULDAMASHVILI, A.I., KOBLIN, A.A., FEDORENKO, A.I.

"Study Of Radiation Damage Of Single Crystals Of Silicon After Doping With Boron Ions With An Energy Up To 100 Kev"

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic Crystals--Collection Of Works), Vol. 3, Part 2, Kiev, "Nauk.dumka," 1971, pp 133-138 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B25)

Translation: The extent of radiation damage in the depths of a doping layer was determined by the method of layered atomization [raspyleniye] by bombardment by a beam of Ag^+ ions with an energy of 1 kev and a current density of 10 microamp. cm^{-2} with subsequent study of the pattern of the deposits on glass collectors with a central 2-mm aperture for transmission of the beam of ions. 3 ill. 7 ref. I.M.

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1/3 . 038 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--RADIATIVE DISPERSAL AND DAMAGE TO SOME METALS IN RADIATION FIELD OF NUCLEAR REACTOR PART I. DISPERSAL BY FAST NEUTRONS -U-

AUTHOR-(04)-GARBER, R.I., KARASEV, V.S., KOLYADA, V.M., FEDORENKO, A.I.

F

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. (USSR): 28: 4006, MAY 1970

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SINGLE CRYSTAL, ENERGY SPECTRUM, NUCLEAR REACTOR, RADIATION DAMAGE, NEUTRON FLUX, IRRADIATION, POLYCRYSTAL, METAL, PARTICLE ACCELERATOR TARGET

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0554 STEP NO--UR/0089/70/000/028/0400/0406

CIRC ACCESSION NO--AP0137642

UNCLASSIFIED

2/3 038 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137642

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF A STUDY OF DEPENDENCE OF A DISPERSAL INTENSITY FOR SINGLE AND POLYCRYSTAL TARGETS ON A REACTOR IRRADIATION DOSE WITH NEUTRON FLUX 2.10 PRIME12 NCM NEGATIVE PRIME2 TIMES SEC NEGATIVE PRIME1. IT IS FOUND THAT THE YIELD OF DISPERSED PARTICLES FROM SINGLE CRYSTALS IS HIGHER THAN IN THE CASE OF POLYCRYSTALS. FOR SINGLE CRYSTAL AS WELL AS FOR POLYCRYSTAL TARGETS A PERIODIC DEPENDENCE ON DISPERSAL YIELD ON ATOMIC NUMBER OF THE TARGET ELEMENT OCCURS. WHILE THE IRRADIATION DOSE INCREASES, THE DISPERSAL INTENSITY IN THE CASE OF SINGLE CRYSTALS DECREASES BUT REMAINS HIGHER THAN THE DISPERSAL INTENSITY OF POLYCRYSTALS. IT IS SHOWN THAT PARTICLES FROM SINGLE CRYSTAL SURFACE ARE EMITTED MAINLY IN THE DIRECTIONS OF DENSELY PACKED ROWS OF ATOMS, WHILE FROM POLYCRYSTALS EMISSION IS ISOTROPIC. INCREASE OF THE IRRADIATION DOSE IS ACCOMPANIED BY LESSENING ANISTROPY IN THE PARTICLE YIELD FROM SINGLE CRYSTALS, LOWERING THEIR ENERGIES AND BROADENING THEIR ENERGY SPECTRUM. ENERGY SPECTRA OF PARTICLES FROM SINGLE AND POLYCRYSTALS ARE MEASURED. INFLUENCE OF ELECTRONIC SHELLS STRUCTURE ON THE YIELD OF DISPERSED PARTICLES FROM TARGETS AND THEIR ENERGY SPECTRA, IS OBSERVED AND INVESTIGATED. ATOMS OF ELEMENTS BELONGING TO THE FIRST SUBGROUP OF ANY PERIOD ARE EMITTED WITH HIGHER VELOCITIES THAN ATOMS OF ELEMENTS OF THE SECOND SUBGROUP BELONGING TO THE SAME PERIOD. THE MAXIMUM VALUE OF ENERGY (UP TO 650 EV) IS OBSERVED IN THE CASE OF ATOMS OF ELEMENTS WITH VERY WEAK DISPERSION PROPERTIES.

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3/3 038 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137642

ABSTRACT/EXTRACT--RESULTS OF THESE INVESTIGATIONS ARE INTERPRETED BY MEANS OF MECHANISMS OF FOCUSING COLLISIONS AND CANALIZING DISPLACED ATOMS IN THE CRYSTAL LATTICE OF TARGETS UNDER NEUTRON IRRADIATION IN THE REACTOR.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--RADIATIVE DISPERSAL AND DAMAGE TO SOME METALS IN RADIATION FIELD OF NUCLEAR REACTOR. PART II. DISPERSAL BY FISSION FRAGMENTS OF PRIME235 U
AUTHOR-(04)-GARBER, R.I., KARASEV, V.S., KOLYADA, V.M., FEDORENKO, A.I.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. (USSR); 28: 406-10, MAY 1970

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--METAL, URANIUM ISOTOPE, ATOM, SINGLE CRYSTAL, POLYCRYSTAL, NEUTRON FLUX, ANGULAR DISTRIBUTION, NUCLEAR REACTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0556 STEP NO--UR/0089/70/000/028/0406/0410

CIRC ACCESSION NO--AP0137643
UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137643

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF A STUDY ARE DESCRIBED OF DISPERSAL OF ATOMS EMITTED FROM SURFACES OF SINGLE AND POLYCRYSTAL TARGETS OF 13 PURE UNFISSIONABLE METALS UNDER IRRADIATION FROM THE BACK SIDE BY FISSION FRAGMENTS OF PRIME235 U IN CONTACT WITH TARGETS AND NEUTRON FLUX IN THE NUCLEAR REACTOR. THE DISPERSAL YIELD AND ANGULAR DISTRIBUTION OF DISPERSED PARTICLES HAVE BEEN INVESTIGATED BY USE OF ACTIVE DEPOSITS OF DISPERSED ATOMS ON COLLECTORS, PLACED DURING IRRADIATION NEAR THE TARGET SURFACE. A PERIODIC DEPENDENCE OF THE DISPERSAL YIELD ON THE ATOMIC NUMBER OF TARGETS HAS BEEN OBSERVED. IT HAS BEEN SHOWN THAT COMBINED IRRADIATION OF POLYCRYSTAL TARGETS BY FISSION FRAGMENTS AND NEUTRONS FROM THE REACTOR DOES NOT RESULT IN SIGNIFICANT INCREASE OF THE DISPERSAL YIELD AS COMPARED WITH IRRADIATION BY NEUTRONS ONLY. IN THE CASE OF SINGLE CRYSTALS, COMBINED IRRADIATION RESULTS IN AN INCREASE OF THE DISPERSAL YIELD. FOR VARIOUS TARGETS, THE SINGLE CRYSTAL DISPERSAL YIELD IS HIGHER THAN IN THE CASE OF POLYCRYSTALS. AUTORADIOGRAPHICAL REGISTRATION OF ACTIVE DEPOSITS OBTAINED AS A RESULT OF DISPERSAL OF SINGLE CRYSTALS SHOW DISCRETE SPOTS WITH SYMMETRY CORRESPONDING TO THE ORIENTATION OF THE DISPERSION CRYSTAL SIDE. AS TO POLYCRYSTALS, THE DENSITY DISTRIBUTION OF PARTICLES ALONG COLLECTORS FOLLOWS THE COSINE LAW. RESULTS OF THE INVESTIGATION MAKE IT POSSIBLE TO ACCEPT THE HYPOTHESIS OF MECHANICAL, AND NOT THERMAL, PROCESS OF DISPERSAL OF ATOMS FROM THE TARGET SURFACES UNDER IRRADIATION BY FISSION FRAGMENTS.

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USSR

PISTRYAK, V. M., GNAP, A. K., KOZLOV, V. F., GARBER, R. I., FEDORENKO, A. I., FOGEL', Ya. M., Physico-Technical Institute, Academy of Sciences, Ukr SSSR, Kar'kov.

"Distribution Profile of 30 and 100 KEV Boron Ions Intersticed in Silicon"

Leningrad, Fizika Tverdogo Tela, Vol 12, No 4, April 1970, pp 1281-1283

Abstract: Monocrystalline specimens of n-type silicon with (111) and (110) crystallographic orientations were investigated after alloying with ions of boron with energies of 30 and 100 kev in an accelerating unit with mass separations. Determination of the distribution profile of the boron ions intersticed in silicon during ion alloying was performed by a method of secondary ion-ionic emission on a mass--spectrometric device. Laminar sputtering of the specimens of ion-alloyed silicon (speed of sputtering ~ 0.0015 micron/sec) was produced by a beam of primary ions with energies of 14 kev and a current density of 0.1 ma/cm^2. The secondary ions B_{11}^+ isolated by the magnetic analyzer were registered by an ion counter. The distribution profiles have satisfactorily narrow maxima embedded at depths of 0.3 micron (30 kev) and 0.43 micron (100 kev) for the (111) plane, and 0.33 micron (30 kev) and 0.49 micron (100 kev) for the (110) plane. The difference in the depths of the maxima of the distribution profile of the impurity at

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PISTRYAK, V. M., et al, Fizika Tverdogo Tela, Vol 12, No 4, April 1970, pp 1281-1283

the same energies of the incident ions, but different crystallographic orientations of the targets, is explained by the better conditions of channeling of the incident particles in crystals with (111) orientations as compared with those of (111) orientations. The authors thank I. G. Gverdtsitel and A. I. Guldmashvil for the specimens submitted and for useful discussions. 1 fig. 6 ref. Received by editors 19 December 1969.

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USSR UDC: 669.017:539.16.04

GARBER, R. I., KARASEV, V. S., KOLYADA, V. M., and FEDORENKO, A. I.

"Radiation Erosion and Damage to Certain Metals in the Field of Radiation of a Nuclear Reactor. Part I. Erosion by Fast Neutrons"

Moscow, Atomnaya Energiya, Vol 28, No 5, May 70, pp 400-406

Abstract: The authors studied the dependence of the intensity of emission of atoms of certain metals on the summary dose of reactor radiation. The targets studied included single- and polycrystals of twenty-five elements: Be, B, Al, Si, Ti, Cr, Fe, Co, Ni, Cu, Zn, Ge, Zr, Nb, Mo, Ag, Cd, Sb, Ta, W. Au, Pb, Bi, Th, and U. It was established that the intensity of particle erosion from single crystals is higher than from polycrystals by 1.5-2.5 times. There is also a periodic variation of intensity of particle emission with atomic number of the element. The maximum intensity was observed for copper, zinc, silver, and gold. The intensity of erosion of single crystals decreases with increasing summary dose. A comparison of the angular distributions of atoms knocked from the surface of single- and polycrystalline targets by fast neutrons showed that the atoms leave the surface of the polycrystals isotropically, whereas they leave the surfaces of singlecrystals primarily in the directions of the densely packed rows of atoms in the crystal.

USSR

GARBER, R. I., et al., Atomnaya Energiya, Vol 28, No 5, May 70, pp [illegible]

As the integral neutron dose is increased to 10^{15} - $10^{16} n \cdot cm^{-2}$, the angular distribution from singlecrystals no longer shows preferential directions.

USSR

UDC: 669.017:539.16.04

GARBER, R. I., KARASEV, V. S., KOLYADA, V. M., and FEDORENKO, A. I.

"Radiation Erosion and Damage to Certain Metals in the Field of Radiation of a Nuclear Reactor. Part II. Erosion with U^{235} Fission Fragments and Neutrons From a Reactor"

Moscow, Atomnaya Energiya, Vol 28, No 5, May 70, pp 406-410

Abstract: The erosion of atoms from the surface of single- and polycrystalline targets of several pure nonfissionable metals was studied as they were bombarded on the back side with U^{235} fission fragments (in contact with the targets) and the flux of neutrons in a nuclear reactor. Since the path length of fragments was significantly less than the thickness of the targets, the removal of material from the targets resulted from "mechanical", not thermal processes, which is also confirmed by the anisotropy in the distribution of particles eroded from the single-crystals in sediment on the collectors. In polycrystalline targets, scattering and blocking of focusons and crowdions, and channeling of displaced atoms occur due to the intercrystalline boundaries and distortions of the lattice in the crystallites. Some of the atoms do not reach the surface of the collector. The total yield of eroded particles from polycrystals, measured from sediment on collectors, is 1.3 times less than the yield of particles from singlecrystals of the same elements. The distribution of particles on the collector is isotropic in the case of polycrystals, but not in the case of singlecrystals.

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USSR

UDC [illegible]

LESHCHENKO, V. P., [illegible], G. D., and [illegible], G. A., Kiev

Technological Institute of Food Industry

"Cation Exchange in Dioxane-Water Solutions on Weakly Acidic Cation Exchange Resin KB-4P2"

Kiev, Ukrainskiy Khimicheskiy Zhurnal, Vol 38, No 2, Feb 72, pp [illegible]

Abstract: A statistical method was used to study the exchange of H^+ ions for Li^+, Cs^+ and Ca^{2+} ions on a carboxyl cation exchange resin KB-4P2 in dioxane-water solutions. The $H^+ \rightarrow Cs^+$ exchange is accompanied by an increase in the selectivity coefficient with increasing concentration of dioxane, while in the case of the $H^+ \rightarrow Li^+$ and $H^+ \rightarrow Ca^{2+}$ exchange, the coefficient decreases. The distribution of the exchanging ions between the weak acidic cation KB-4P2 phase in H^+ form and the phase of external solution is affected by the hydrolysis of the resin's salt form in dioxane-water mixtures; this effect reaches a maximum when the concentration of dioxane in the mixture is [illegible].

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USSR

UDC 8.74

DOLGOPOLOV, V. N., GONDAREV, V. P., PANOV, D. N., KOSTORNICHENKO, V. G., FEDORENKO, I. I.

"Generator of Normal Discrete Random Processes with a Given Correlation Function"

V sb. Regional'n. nauch.-tekhn. seminar po stat. analizu, modelir. i avtomatiz. kontrolya ob'ektov s konstruktivnoslozhn. strukturoy (Regional Scientific and Technical Seminar on Statistical Analysis, Simulation and Automation of the Control of Objects with Structurally Complex Structure -- collection of works), vyp. 3, Taganrog, 1971, pp 13-21 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V562)

No abstract

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AN0032607 F UR 4012

FROM: FBIS Daily Report, Soviet Union, 13 February 1970, Vol III, Nr 31,
pp C 1-C 3

USSR PRAVDA DISCUSSES ADVANTAGES OF ASSOCIATIONS

Moscow PRAVDA 9 Feb 70 p 2 L

[Article by Academician N. Fedorenko and Doctor of Economic Sciences Prof P. Bunich:
"The Association Means Progress"; first two paragraphs are PRAVDA introduction]

[Text] Moscow--The Soviet Union is one of the countries with a very high concentrati
of production. But the interests of raising its efficiency under the conditions of
the scientific-technical revolution demand a further development of this process.
Instances often occur where plants and factories forming essentially a single comple
are organizationally splintered and sometimes subordinated to different ministries.
There is lacking the proper centralization of the general economic functions of
enterprises related to one and the same branch. A considerable portion of our produ
units are of less than optimum size. At present nearly three-quarters of our enterp
have no more than 500 workers and they produce only 25 percent of industrial output.
number of workers at half the enterprises does not exceed 200 men. These account fo
mere 10 percent of the output.

How can one better organize the control of production, developing the principle of
economic reform?

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AN0032607

Practice shows that an insufficient level of production concentration leads to the dispersion of capital investments and shortage of financial resources, violating the coordination of economic ties. Superfluous control links emerge, which make output more expensive and create difficulties in production leadership.

Where does the solution lie? It is suggested by the experience of creating financially autonomous production associations, particularly the Leningrad firms. Their successful operation points convincingly to the fact that such associations meet the demands of scientific and technical progress and the economic reform to the greatest degree.

There can be several types of production associations. The first type are multiproduct optimum concentration associations, which include enterprises which have engaged in cooperation between themselves for the output of the end product. They embrace the production of different goods within any particular branch and sometimes several branches. They also include agricultrual and industrial, scientific and industrial, industrial and commercial, and other complexes.

As examples one can cite the Magnitogorsk metallurgical combine, the Bereznikov chemical combine, the Tashkent textile combine, the Moscow Likhachev and the Gorki motor vehicle plants, the powerful petrochemical complexes, and the multibranch food combines.

With associations of this type the former autonomous enterprises lose part of their independence and are sometimes turned into production facilities and shops. Remote subsidiaries [filialy] and production facilities, each of which turn out finished products, are generally more independent.

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Such associations can be territorial or all-union. If they relate to the territorial associations and they are comparatively few in number, then two links emerge in the system of control: the association and the ministry. This system is also expendient for all all-union associations. But if the number of territorial complexes is large then a special association of union significance (of the Yugostal and Tsentrokhim type) can emerge between them and the ministry. Then the control scheme looks like this: territorial association-union association-ministry.

The second, trust-type of association embraces enterprises which turn out similar products. Here the variant of the horizontal concentration of production is possible, whereby the center fulfills many functions of operational leadership. This is characteristic of associations manufacturing the same products and a narrow range of goods. The power systems, the Bashneft and Tatneft oil-extracting associations, the Leningrad Svetlana associations optical instrument, and other associations, for example, are organized in this way. The enterprises in them sometimes retain certain juridical rights, but they are always less than they would have had as separate production and economic units.

Trust-type associations are generally optimum forms of a branch centralizing a comparatively limited circle of functions. This is typical of those which turn out a wide range of products. In these cases, supply, for example has been individualized according to the enterprises, but sales are notable for smaller batches of products, and it would not be expedient to centralize them completely

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Such are the associations of knitwear enterprises, the Moscow furniture industry association, the Latviya sewn goods firm, the Ukraina sewn goods association, the Melodiya all-union phonograph record firm, and others.

The economic advantages of any type of associations are obvious. All the collectives belonging to it are linked between themselves by a single financially autonomous interest in successful work. The common services satisfy the needs of the enterprises more reliably and efficiently. The associations formulate long-term forecasts and organize supply and marketing ties. Accountancy work and patenting services are concentrated and made cheaper

More precise synchronization between scientific research, planning, design, testing new products and devising equipment to manufacture them, and training cadres is insured. The Sibelektrotyazhmash, for instance, has already been joined in association with a scientific research institute. The Electroapparat, Electrokeramika, Akkumulyator, Kondensator, and other scientific-industrial associations have been created.

It is economically more profitable to use automated control systems based on computers in an association than at an individual, small enterprise. Here automated control systems are the optimum variants for solving long-term and current issues. Prospects are opening up for creating and developing new control methods, improving the structure of production and the incentive systems, and carefully substantiating all normatives.

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Experience shows that associations insure the financial stability of production and safeguard the interests of the state budget.

A most important advantage of associations is that they create the preprequisites for further developing the reform and increasing its effectiveness. It is a question of substantially improving the existing mechanism and transferring to the self-financing of capital investments and outlays on circulating capital, scientific research, and the maintenance of the control apparatus. Incentive funds and resources for expanded reproduction can be at the disposal of the associations by establishing a long-term quota from their calculated profits.

Extending the rights of large economic units makes it possible to relieve the ministry of "minor matters" and a considerable part of operational work.

Typical of associations, particularly of the concern type, are clearly defined economic ties between all production facilities with synchronization and scheduled functioning in work. Here, every subsection is placed in conditions which impel it to strictly fulfill its pledges for all parameters and schedules and to "inscribe itself" clearly into the production complex's plan. The solution of the strategic questions of developing production--distributing the volumes of capital investments, utilizing the sources of their financing, fixing long-term contractual orders for the scientific establishments, and studying and forming a demand for the end product--is concentrated in the hands of the general management [direktsiya].

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The type of association being reviewed leads to a sharp intensification of specialization in basic production and to a considerable acceleration of technical progress. As soon as all the intermediary production facilities work on their main article [na golovnoye], they are freed from unnecessary production and specialize in the output of assemblies and parts and in specified operations. It is precisely here that,under the conditions of increasing concentration, the new equipment pays its way on the basis of mass and large-scale series production. Certain small enterprises, merging into an association, change their specialization and reorganize themselves to operate in "one direction", thereby becoming economically profitable and viable.

Particularly characteristic of associations of related enterprises is that common services are widely concentrated and the control apparatus becomes cheaper and simpler. Presently, according to sample data, out of every 100 machine-building plants, 99 manufacture cogged wheels, 65--reinforcing hardware, 71--cast iron, 84--forgings, and 57--nonferrous castings. By merging into an association the small auxiliary production facilities, one can create large technically equipped services for maintenance, transportation, manufacturing semifinished products, tools, gear and nonstandard equipment, and packaging. The possibility emerges of uniting the forces of scientific laboratories of the same specialization, centralizing the instruction of cadres, creating a common storage facility, and concentrating reserves.

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Since associations will solve more complex problems than enterprises, their leaders must go through special training, know the latest achievements in the sphere of control, and be skillful organizers, production specialists, and scientists.

The creation of financially autnomous associations of all types is an extremely complex task. The desired effect can only be obtained provided that we base ourselves on careful economic calculations and not on the existing control structures. The organization of every association must be preceded by projects which reveal the supposed benefit. Herein, such projects must be examined not in isolation from the association but in their interdependence. Otherwise substantial "pros" and "cons" can be passed over and variants for transferring enterprises from some links to other left unexamined.

A project for creating an association is a study which must determine precisely the deeper specialization in production, the concentration of many services, and the development of scientific work. Herein we must aim for returns even in the very near future and, even more so, in 2 to 3 years time.

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USSR

UDC: 51:330.115(03)

FEDORENKO, N. P. (editor)

[redacted]

"Mathematics and Cybernetics in Economics. A Reference Dictionary"

Matematika i kibernetika v ekonomike. Slovar'-spravochnik (cf. English above), Moscow, "Ekonomika", 1971, 224 pp, ill. 1 r. 23 k. (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V756 K)

[No abstract]

1/1

1/2 .. 036 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--RESONANCE CHARGE EXCHANGE IN A HE POS6TIVE AND HE SYSTEM -U-

AUTHOR-(04)-LATYPOV, Z.Z., FEDORENKO, N.V., FLAKS, I.P, SHAPORENKO, A.A.

F

COUNTRY OF INFO--USSR

SOURCE--PIS'MA ZH. EKSP, TEOR. FIZ. 1970, 11(3), 189-92

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--ION BOMBAROMENT, HELIUM, ELECTRON RESONANCE, CHARGE EXCHANGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0780 STEP NO--UR/0386/70/011/003/0189/0192

CIRC ACCESSION NO--AP0104226
UNCLASSIFIED

2/2 · 036 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0104226

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CROSS SECTION, DELTA, OF THE PROCESS HE POSITIVE PLUS HE YIELDS HE PLUS HE POSITIVE WAS MEASURED AT ENERGIES E EQUALS 150-3200 EV IN THE ASSEMBLY DESCR6BED BT PREVIOUSLY (LATYPOV, ET AL., 1968). FOR THE PROCESS, DELTA EQUALS F(E) IS AN OSCILLATING FUNCTION. THE DIFFERENCE BETWEEN EVEN AND ODD STATES DID NOT PASS THROUGH A MAX. OSCILLATIONS WERE EXPLAINED ON THE ASSUMPTION OF AN EFFECT OF SCATTERING OF PARTICLES IMPINGING ON THE HOST 4F THE ATOM TARGET.

UNCLASSIFIED

FEDORENKO, P.P.

Automation

JPRS [illegible]

[illegible] June 1972

[illegible]

ON THE STATE OF AND PROSPECTS FOR DESIGNING AUTOMATED SYSTEMS OF CONTROL FOR INDUSTRIAL ENTERPRISES

[Article by P. P. Fedorenko; Moscow, Ekonomika i Matematicheskiye Metody, Russian, No 2, March-April 1972, pp 166-174]

The growth and increased efficiency of public production put forward an urgent problem of our day -- improving systems of control over all elements of the national economy.

In the Directives of the 24th CPSU Congress on the Five-Year Plan for 1971-1975, it was noted that improving the system of planning and controlling the national economy under contemporary conditions requires widespread use of mathematical economic methods, electronic computer technology, office machinery, and communications equipment.

One of the most important areas of interest in improving control over production is designing ASUP's [automated systems of production control], which are already operating successfully at many enterprises of the country. During the Ninth Five-Year Plan, it is intended to introduce more than 1,600 such systems into use, including about 1,500 at industrial enterprises. It seems that the assignments laid out by the directives are a lower limit, and in fact more will be designed.

The basis for designing systems was the extensive research and experimental work done in the area of the theory and methodology of constructing them, and the most important condition for practical introduction of ASUP's was the conducting of comprehensive experiments at a number of sites.

Today it can be stated that we have worked out a number of important theoretical problems in improving control

FEDORENKO, O.A.

JPRS 57003
L-73

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VIII-9a. PERFECTION OF THE STRUCTURE AND MECHANICAL STRENGTH OF SINGLE CRYSTALS OF THE $A^{II}B^{VI}$ TYPE GROWN FROM A MELT AND FROM THE VAPOR PHASE

[Article by L. A. Sizoyev, D. V. Atroshchenko, O. A. Fedorenko, V. V. Kukol', Khar'kov; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 110]

The single CdS and CdSe crystals grown from a melt under inert gas pressure have the structure of wurtzite and ZnSe, CdTe and ZnTe have the structure of sphalerite. The nonalloyed single crystals of ZnS have the structure of sphalerite but they contain a large number of imperfections connected with the statistical disordering and errors in the superposition of the atomic layers. The type of crystal of ZnS single crystals grown from the vapor phase is determined by the synthesis conditions and, above all, by the temperature.

The etching pictures of different planes of ZnS single crystals grown from a melt and from the vapor phase are compared. A study was made of the microstrength characteristics of single $A^{II}B^{VI}$ crystals as a function of the crystal structure, the degree of its perfection and the lattice parameters.

It was demonstrated that alloying single ZnS crystals with donor admixtures (aluminum) stabilizes the wurtzite structure, and alloying with acceptor admixtures (copper), the sphalerite structure. For alloyed single crystals, a study was made of the anisotropy of the microhardness, and conclusions were drawn regarding the laws of plastic flow caused by the indentor of the microhardness meter.

Higher Algebra & Geometry and Topology

USSR

UDC 518:62-50

FEDORENKO, R. P., Moscow

"The Iteration Solution of Linear Programming Problems"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol. 12, No. 2, Mar/Apr 72, pp 298-308

Abstract: Improvements in an iteration method proposed in two previous articles by the author for solving problems in nonlinear programming are described. These improvements are to increase the efficiency and reliability of the algorithm for applying the ideas of the conjugate gradient method. The method is oriented toward problems of high dimensionality with incompletely filled matrices, and no transformation of the initial matrix of the problem occurs. Only a fixed number of vectors appear as auxiliary objects. Two moments which were absent in the previous works are described: problems with one-sided restrictions on the desired quantities are discussed, and the procedure B of the previous work is considerably improved by using the conjugate gradient method in it. Sample solutions of problems illustrating the efficiency of the algorithm are given. It is noted that in these calculations the machine zero had a

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FEDORENKO, R. P., Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 12, No 2, Mar/Apr 72, pp 298-308

magnitude of 10^{-10}, so that the calculations in all three problems were interrupted in any situation in which the convergence of the conjugate gradient method stopped completely due to certain quantities going to the machine zero. Problems with incompletely filled matrices should ensure greater efficiency of the conjugate gradient method.

USSR UDC 621.763:669.01

KARPINOS, D. M., FEDORENKO, V. K., BURYKINA, A. L., and GORSKIY, V. V.,
Institute of Problems of Material Science, Academy of Sciences UkrSSR,
Institute of Metal Physics, Academy of Sciences UkrSSR

"Study of Interactions at the Phase Division Boundary in Composite Materials with a Nichrome Matrix and Fibers Based on Tungsten and Molybdenum"

Kiev, Poroshkovaya Metallurgiya, No 2, Feb 74, pp 64-75

Abstract: This work studies the structure and phase composition of the transition zones, determination of the mechanism and kinetics of growth of interaction zones, the influence of alloy elements in the fiber and matrix on the mechanism and kinetics, the study of recrystallization in the fibers and determination of the influence of all these factors on some of the strength characteristics of fiber-reinforced materials. It is established that the phase composition of the reaction zone does not influence the quantitative relationships of layer growth. The kinetics of diffusion processes in the system studied correspond to a vacancy mechanism. The alloying elements in the fiber and matrix have

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USSR

KARPINOS, D. M., et al., Poroshkovaya Metallurgiya, No 2, Feb 74, pp 64-75

a significant influence on the parameters of layer growth. The diffusion of nickel and chromium in the fiber is rapid. Recrystallization phenomena in fibers represent one of the main causes of the reduction in strength of fiber reinforced materials during long-term operation.

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Acc. Nr: AP0049849

Abstracting Service: CHEMICAL ABST. 5-70

Ref. Code: 21R0032

FEDORENKO V.V.

101290m **Apparatus for studying the wear of polymer materials during reciprocation.** Severin, P. A.; Stadnikov, M. T.; Lysvi, P. A.; Fedorenko, V. V. (Inst. Khim. Vysokomol. Soedin., Kiev, USSR). *Zavod. Lab.* 1970, 36(1), 101-3 (Russ). The title app. for studying the wear resistance of plastics during reciprocating friction along metals at low and high temps. in various gas media, is described. The app. is suitable for use at operating loads and speeds of many reciprocating engines. The driving motion and application of load on the samples are accomplished on one side (vertically), while the samples acquire reciprocating motion along the arc of a ring-shaped countershaft. This permits one to achieve quite simply the necessary insulation of the friction block from the surrounding medium. The app. was used to test samples of filled Ftoroplast-4 at various temps. and sliding velocities over a broad range of loads. DBJR

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REEL/FRAME
19801774

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USSR

UDC 621.791.008.1

FEDORENKO, Ya. A.
[redacted]

"Events at the Scientific Council on Welding Problems"

Kiev, Avtomaticheskaya svarka, No 3, Mar 72, p 76

Abstract: The article discusses a joint session held on 30 November 1971 in Kiev by the Temporary Committee on Automation and Control of Welding Processes and the Seminar on Automation and Electric Equipment. The session was attended by about 100 representatives of various organizations. The reports dealt with the following topics: Objectives of Automation of Secondary Operations in Spot Welding (Electric Welding Institute /IES/; Status and Prospects of Programmed Control for Electron-Beam Welding (IES; Kiev Polytechnic Institute); State of Research in Automation of Flash(-Butt) Welding (Central Scientific Research Institute of Heavy Machinery /TsNIITMASh/; IES); Automation of Radio-Frequency Welding (IES). The resolutions adopted by the participants emphasize the currency of research conducted at IES imeni Ye. O. Paton on automation of spot-, butt-, and radio-frequency welding, and outline a program of future research in this area including formulation of requirements for program control systems for electron-beam welding and a listing of standard specialized equipment for programmed control of welding and microtreatment.

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USSR UDC: 621.791.008.1

FEDORENKO, Ya. A.

"In the Welding Coordination Council"

Kiev, Avtomaticheskaya Svarka, No 1, Jan 73, p 76

Abstract: On 17 October 72, the council met on "New processes of welding and welding structures." The meeting was continued and expanded on 18 October. Progress toward fulfillment of the ninth Five Year Plan in this area is good. Considerable attention is being given to workers' health conditions. Reports were read at the meeting on the application of the latest foreign developments; improvement of semiautomatic welding equipment and techniques; use of industrial robots for automation of welding; and prediction of the development of automatic welding in the Soviet Union up to 1990.

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USSR UDC 621.396.6-181.5

SIDOROV, Yu. I., GUSAKOV, V. M., KOROLEV, M. A., FEDORENKO, Yu. S.

"Semiconductor Integrated Circuits Based on MOS Transistors"

Elektron. prom-st'. Nauchno-tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1970, No 1, pp 34-38 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V179)

Translation: The authors survey microcircuits based on MOS transistors put out by non-Soviet companies, pointing out applications and giving parameters. Comparative characteristics are given for microcircuits based on MOS and bipolar transistors. The use of MOS microcircuits in memory units is discussed. Two illustrations, three tables, bibliography of 24 titles. N. S.

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PHYSICS
Acoustics

USSR

KMITA, A. M., MOROZOV, A. I., FEDORETS, V. N., Institute of Radio Engineering and Electronics, Academy of Sciences USSR, Moscow

"Impurity-Dipole Absorption of Ultrasonic Waves in CdSe at Low Temperatures"

Leningrad, Fizika Tverdogo Tela, No. 4, Apr 71, pp 1011-1014

Abstract: The absorption of piezoactive ultrasonic waves in photoconducting CdSe crystals at a frequency of $3 \cdot 10^9$ Hz was investigated by the echo method with longitudinal ultrasonic waves generated from the free end surface of a sample placed at the antinode of the electric field of a coaxial quarter-wave resonator. To avoid the effect of infrared background the resonator and sample were placed directly in the tube of a helium cryostat and cooled in helium vapors. It was observed that in the temperature range 4.2-15°K the predominant absorption mechanism for ultrasonic waves at low conductivities is impurity-dipole absorption of ultrasound that is unconnected with the conductivity of the crystal at constant current and is caused by the capture of photoelectrons on small impurity centers. absorption of the Debye dipole dielectric relaxation type. If the conductivity of the crystal is sufficiently high, ordinary electron absorption of ultrasonic

USSR

KMITA, A. M., et al, Fizika tverdogo tela, No. 4, Apr 71, pp 1011-1018

waves is observed. As the temperature increases, the impurity-dipole absorption decreases due to a decrease in the effectiveness of impurity centers. The effects observed in CdSe were very similar to effects observed by other authors in CdS and support the generality of the theory that has been established for impurity-dipole absorption of ultrasound for crystals of the piezosemiconductor class, in which impurity electron states exhibit natural dipole moments. According to the theory the phenomena observed in CdS are explained by the absorption of piezo-active ultrasonic waves on photoelectrons captured by small impurity centers which have fairly high natural dipole moments at helium temperatures; these electrons, being bonded, do not make a contribution to the conductivity of the crystal in a constant field but can participate in the absorption of sound as free electrons by interacting with the variable field of the waves. It follows from the theory that this mechanism for absorption of sound at low conductivities is predominant in the low-temperature region for this class of crystals in which there is a sufficient concentration of capture centers.

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USSR

BALOSHIN, O. N., VLADIMIRSKIY, V. V., DUKHOVSKOY, I. A., KISHKURNO, V. V., KRUTENKOVA, A. P., KULIKOV, V. V., NIKOLAYEVSKIY, YE. S., PETRUKHIN, V. N., RADKEVICH, I. A., and FEDORETS, V. S., Institute of Theoretical and Experimental Physics of the State Committee for the Use of Atomic Energy

"Study of the Reaction $\pi^- p \rightarrow pX^-$ at a Momentum of 3.25 GeV/c With a High Momentum Transfer"

Moscow, Yadernaya Fizika, Vol 14, No 1, Jul 71, pp 131-133

Abstract: The authors investigate the spectrum of missing masses of a proton in the reaction $\pi^- p \rightarrow pX^-$ for high transfer momentums usin a track spectrometer with optical spark chambers in a magnetic field. found the momentum of the primary π^- mesons to be 3.25 GeV/c, and they measured the differential cross section of the formation of the ρ^- meson in the range of angles $-1 \leq \cos \theta^* \leq -0.0005$, which was found to be equal to 28.2 ± 9.8 μbarn/sterad. Figure 1 shows the spectrum of the missing masses in this reaction for a momentum of the π^- meson of 3.2 GeV/c. Figure 2 shows the cross section of the creation of the ρ^- meson backwards in the reaction $\pi^- p \rightarrow p\rho^-$ as a function of the momentum of the π^- mesons. The article contains 2 figures and 5 bibliographic entries. 1/1

USSR

FEDORIN, V. A.

"Muscle Contractions in Electrical Fields"

Moscow, Biofizika, Vol 16, Vyp 4, Jul/Aug 72, pp 730-732

Abstract: The response of the frog sartorius muscle to 25-800 V/cm electric fields of 100-200 msec duration was investigated after the muscle samples were soaked in a KCl or a 0.05% novocain solution to prevent generation of action potentials on the sarcolemma. The samples, kept in cuvettes with two platinum electrodes, were positioned with the long axis of the muscle fibers parallel to the direction of the electrical field. The first muscle contractions were observed in electrical fields somewhat over 300 V/cm. Maximum contractions (some 10% of the initial length) occurred at 800 V/cm. Second and third stimulations produced weaker contractions, and subsequent stimulations elicited no more responses. Two mechanisms of action are suggested. Release of calcium ions during initial stimulation, followed by injury of the sarcoplasmatic reticulum and trapping of these ions, or an interaction between the electrical field and the actin and myosin threads if they contain groups with opposite electric charges.

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USSR

AGARTANOV, V. N., ANTIPOV, V. B., KOLPAKOV, V. V., FEDORIN, Ye. M., Tomsk State University

"Effect of Intense Optical Emission on the Threshold of Instability of Spin Waves in the Case of Parallel Pumping"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 8, Aug 72, pp 2446-2448

Abstract: A single crystal of yttrium ferrite-garnet in the form of a rectangular prism measuring 3×4×13 mm, with polished faces, having its axis coincident with crystallographic direction [111] was placed in the center of a reflective cylindrical cavity with TE_{011} mode is such a way that the axis of the specimen coincided with the axis of the cavity. Pumping was by 300-μs square pulses with a prf of 9.4 GHz. LDTI-68 laser emission was focused normal to the surface of the crystal in the center of the side face. A reduction was observed in the threshold of instability of spin waves which was attributed to the absorption of SHF power by particles knocked from the surface of the specimen into the cavity region where there was a strong alternating electric field.

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USSR UDC 616.981.48-022.38-036.22

MATSIYEVSKIY, V. A., LOGACHEV, A. V., FEDORINA, A. P., and PISKLOVA, A. S.,
Ivano-Frankovsk Medical Institute and Ivano-Frankovskaya Oblast Sanitary-Epidemiological Station

"An Outbreak of Food Poisoning Caused by E. coli 0124:K72 (B17)

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 3, 1971, pp 137-139

Abstract: An acute dysentery-like disease broke out among children and adult attendants in a children's sanatorium. The disease, caused by E. coli 0124:K72(B17), was characterized by an explosive onset, elevated temperature, gastrointestinal disturbances (abdominal pain, liquid stools sometimes admixed with mucus and blood), and brief course. All the cultures isolated from the patients produced a positive methyl red reaction and a negative Foges-Proskauer reaction. They were lacking in fibrinolytic and plasma-coagulating or hemolytic properties. All were sensitive to standard colicins but insensitive to penicillin and furacillin. They formed indole and hydrogen sulfide and fermented glucose, mannite, maltose, arabinose, xylose, sorbite, dulcite, glycerine, lactose, and rhamnose with the formation of gas and acid. However, they did not ferment sucrose, inosital, salicin, urea, or milk.

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USSR

UDC 632.957.14/.15/.16

FEDORINCHIK, N. S., Candidate of Agricultural Sciences, All Union Institute of Plant Protection

"Results and Prospects of Use of the Microbiological Method"

Moscow, *Zashchita Rasteniy*, No 3, 1971, pp 20-24

Abstract: The bacterial preparation entobacterin, derived from Bac. thuringiensis var. galleriae, and developed as a pathogenic agent for the control of insect pests by the All Union Institute of Plant Protection, has become well-known in the USSR and abroad. The strains of this microorganism that were initially used produced only endotoxin. Subsequently at the same institute, strains of Bac. thuringiensis var. galleriae were selected which also produce an exotoxin. These strains are highly pathogenic to the house fly, Acrididae, weevils, and other harmful insects. While entobacterin containing endotoxin is active only against Lepidoptera, entobacterin derived from strains which also produce exotoxin is active against insects of other orders as well. Good results were obtained by using entobacterin

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FEDORINCHIK, N. S., Zashchita Rasteniy, No 3, 1971, pp 20-24

together with chemical insecticides against the codling moth. Use of entobacterin together with entomophagous insect parasites is promising. Application of entobacterin does not result in the selection of resistant insect strains, but weakens the progeny. This has been established in work at the Institute of Plant Protection of the Southwestern Regions (at present the All Union Scientific Research Institute of the Biological Method). At Irkutsk University the bacterial preparation dendrobacillin was developed from Bac. thuringiensis var. dendrolimus. Dendrobacillin is effective against the Siberian silkworm, the cotton bollworm, and leaf-eating insects that damage orchards. Insectin, which was developed by the Institute of Forests and Wood, Siberian Department of the Academy of Sciences USSR, and is derived from the microorganism Bac. insectus, also proved effective against the Siberian silkworm. Extensive work at the All Union Institute of Plant Protection and elsewhere in the USSR has been done on the isolation and use of viruses that cause

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FEDORINCHIK, N. S., Zashchita Rasteniy, No 3, 1971, pp 20-24

insect diseases (granulosis of the turnip moth which damages cotton plants, granulosis of the grey rustic moth that damages wheat in Kazakhstan, and polyhedrosis of the cabbage moth, turnip moth, and other species). Fungal infections for the control of insect pests have been studied. Boverin (derived from Beauveria bassiana, the pathogen of white muscardine) developed by the Ukrainian Institute of Plant Protection proved effective against the Colorado beetle and the codling moth. The use for the control of plant diseases of fungi, Actinomycetes, and bacterial antagonists as well as antibiotics has been studied. This includes work on the Trichoderma fungus, effective against root rot of grain, cotton wilt, and other infections; the antibiotic phytobacteriomycin; the antibiotic trichocetin effective against fungi causing powdery mildew infections; arenarin for the control of bacterial diseases of tomatoes; and imanin, which inhibits some virus infections of Solanaceae. Promising results have been obtained in the investigation of

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USSR

FEDORINCHIK, N. S., Zashchita Rasteniy, No 3, 1971, pp 20-24

the possibilities of infecting harmful insects with diseases caused by protozoa and of using entomopathogenic nematodes (e. g., of the genus Neoplectana).

4/4

USSR

FEDORISHIN, B. A., Ukrainian Scientific Research Institute of Psychology,
Kiev

"The 'Luch-68' Apparatus for Psychological Research"

Moscow, Voprosy Psikhologii, No 3, May/Jun 73, pp 155-157

Abstract: The paper describes a psychological testing device consisting basically of a display screen and a pushbutton panel with 64 buttons in an 8 x 8 square arrangement. The problem is flashed on the screen, and the subject must push the proper sequence of buttons. The buttons pushed are recorded as is the order in which they are depressed. Problems can be displayed manually or automatically in accordance with a program. The equipment includes a timing relay which enables exposure for precisely predetermined time intervals from 0.1 to 110 s. Examples of utilization of the system are presented.

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USSR

UDC 621.398

BRAGIN, A. A., FEDORIV, R. F., L'vov

"A Method of Synchronization in Telemetering Systems"

Kiev, Otbor i Peredacha Informatsii, No 29, 1971, pp 59-62

Abstract: A method of synchronizing the transmitting and receiving parts of telemetering systems with time division of the channels by the information signal is described. A circuit is considered for realization of a general channel signal of a system with pulse duration modulation and a constant cycle frequency. The device implementing the described procedure for synchronization and cophasing the channels comprises a converter to convert the pulse duration to the amplitude of the peak detector, a comparison circuit, a binary cell (commutator), and time selectors. Various versions of the circuit diagram for the device are analyzed and means of selecting the circuit parameters are discussed.

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1/2 027 UNCLASSIFIED

TITLE--COMMUTATION EFFECT IN BISMUTH TYPE SEMIMETALS -U- PROCESSING DATE--13NOV70

AUTHOR-(04)-BIVOL, V.G., BODIUL, P.P., FEDORKO, A.S., GITSU, D.V.

F

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 2, PP 545-550

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--BISMUTH, BISMUTH ALLOY, ELECTROMOTIVE FORCE, MAGNETIC FIELD EFFECT, ANISOTROPY, HIGH TEMPERATURE EFFECT, ENERGY BAND STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0628 STEP NO--GE/0030/70/037/002/0545/0550

CIRC ACCESSION NO--AP0107225

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0107225

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE NERNST ETTINGSHAUSEN LONGITUDINAL EFFECT ON THE DIRECTION OF THE MAGNETIC FIELD FOR THE CASE OF SEMIMETALS IS STUDIED THEORETICALLY AND EXPERIMENTALLY. A QUITE UNIQUE CORRESPONDENCE IS FOUND BETWEEN THE ANISOTROPY OF THE EFFECT AND THE BAND STRUCTURE NEAR THE FERMI LEVEL. IT IS SHOWN THAT THE COMMUTATION EFFECT WHICH DETERMINES THE DEPENDENCE OF THE MAGNETO THERMO E.M.F. MAGNITUDE ON THE DIRECTION OF THE INDUCTION VECTOR, PERMITS TO JUDGE ABOUT THE NUMBER AND LOCALIZATION OF BAND EXTREMA IN THE K SPACE. THIS IS AN EFFECTIVE WAY FOR STUDYING BAND STRUCTURES OF BISMUTH AND ITS ALLOYS AT HIGH TEMPERATURES.

UNCLASSIFIED

USSR UDC: 681.333

FEDORKO, Yu. M., MAKARENKO, Yu. A.

"A Device for Modeling the Process of Serving Passengers in Ticket Offices"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 5, Feb 71, Author's Certificate No 293254, Division G, filed 25 Mar 68, published 15 Jan 71, p 167

Translation: This Author's Certificate introduces a device for modeling the process of serving passengers in ticket offices. The device contains counters, diodes, flip-flops, OR and NOT circuits, generators, a functional converter and a decoder. As a distinguishing feature of the patent, the functional possibilities of the device are extended by adding a random number generator. The output of the random number generator is connected to the input of the first counter, the outputs of this counter being connected through interrogation diodes to the inputs of readiness flip-flops whose outputs are connected through sampling diodes to the inputs of the first OR circuit. The output of this OR circuit is connected to the control input of the time generator. The second input of the time generator is connected to the output of the functional converter, while the output of the time generator is connected to the inputs of feedback diodes whose outputs are connected to the inputs of counters of the number of referrals of the ticket

USSR

FEDORKO, Yu. M., MAKARENKO, Yu. A., USSR Author's Certificate No 293254

office to the dispatcher and to the reset inputs of the corresponding flip-flops. The second inputs of the feedback diodes and sampling diodes are connected to the corresponding outputs of the interrogation decoder. The inputs of the decoder are connected to the outputs of the second counter, whose input is connected in turn through a diode to the input of a pulse generator. The second input of the above-mentioned diode is connected through a NOT circuit to the output of the first OR circuit. The outputs of the first counter are connected in addition to the inputs of the response diode, whose output is connected to the input of the control flip-flop and through the second OR circuit to the reset input of the first counter. The second input of this OR circuit is connected to the reset input of the control flip-flop. The outputs of the control flip-flop are connected to the inputs of the interrogation and response diodes.

2/2

Acc. Nr.: AN0045465 F

Ref. Code: UR 9003

JPRS 50162

"Akademik Kurchatov" Sails for Atlantic on International Study Program

(Complete translation: "Course -- the Atlantic," by A. Fedorov; Moscow, Izvestiya, 7 March 1970, p 6)

The scientific research ship "Akademik Kurchatov" has left on a 100-day voyage to study the interaction of air masses and the ocean in the tropical part of the Atlantic.

This is the ship's seventh voyage. On previous trips Soviet scientists, together with their colleagues from England and the United States, studied bottom rock in a gigantic fault of an underwater ridge extending from above the Arctic Circle to the Antarctic. And in the Bay of Biscay an expedition of the "Akademik Kurchatov," with the assistance of French scientific vessels, conducted seismic sounding of the bottom.

On this voyage scientists from the German Democratic Republic, the Federal Republic of Germany, England, the United States and Canada will work with our scientists in the laboratories of the "Akademik Kurchatov." [4]

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UDC 51

USSR

DEDIKOV, E. A., PANISHEV, A. V., TIKHENKO, A. Yu., FEDOROV, A. A.

"On One Method for the Ordering and Analysis of the Structure of an Information Model for Data Processing"

Pribory i sistemy avtomatiki. Resp. mezhved. temat. nauch.-tekhn. sb. (Automation Devices and Systems. Republic Interdepartmental Thematic Scientific-Technical Collection), 1972, No. 24, pp 45-51 (from RZh-Matematika, No 11, Nov 72, Abstract No 11V479)

Translation: A formal analysis is given of the structure of an information model for data processing. The apparatus of the theory of graphs is used to represent the structure. The problem of ordering and analysis of the structure is formulated. Algorithms and block diagrams are developed for solving many problems in the analysis of the structure,and examples are given. Authors abstract.

UDC: 51

USSR

DEDIKOV, E. A., PANISHEV, A. V., TIKHENKO, A. Yu., FEDOROV, A. A.

"Method of Ordering and Analysis of the Structure of an Information Model of Data Processing"

Pribory i Sistemy Avtomatiki. Resp. Mezhved. Temat. Nauch.-tekhn. Sb. (Automation Devices and Systems. Republic Interdepartmental Thematic Scientific and Technical Collection], 1972, No 24, pp 45-51 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V479, by the authors)

Translation: A formal analysis is presented of the structure of an information model of data processing. The apparatus of graph theory is used to represent the structure. The problem of ordering and analysis of the structure is stated. Algorithms and block diagrams are developed for the solution of a number of problems of structural analysis, and examples are presented.

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USSR UDC: 621.762+669.046.58:543.7'062

FEDOROV, A. A.

New Methods of Analysis of Metal Powders and Slags (Novyye metody analiza metallicheskikh poroshkov i shlakov), Moscow, "Metallurgiya" Press, 1971, 248 p., 31 illustrations, 62 tables, 340 bibliographic references.

Translation of Annotation:

The monograph presents new chemical methods for determining the contents of metallic, ferric, and ferrous oxides and oxygen in iron powders and slags. Related reference data are critically reviewed and new fundamental stages of studies in the development of new analytical methods are described. By virtue of the new methods it has been possible to detect the shortcomings of current methods and to correlate the regularities of iron oxide reduction under various conditions, which in turn, permitted for the first time to devise new rapid methods for approximate determinations of metallic, ferric, and ferrous oxides. The book is intended for engineering, technical, and scientific personnel of chemical laboratories of industrial enterprises and scientific research institutes serving the metallurgical industry, and may be useful for students of secondary and higher educational institutions.

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USSR

FEDOROV, A. A., (Novyye metody analiza metallicheskikh poroshkov i shlakov), Moscow, "Metallurgiya" Press, 1971.

Translation of TABLE OF CONTENTS (abridged):

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- Total Iron Determination 11
- Determination of Impurities 19
- Oxygen Determination 30
- Determination of Bivalent and Trivalent Metallic Iron 62
- Basic Rule of Reducing Iron Oxides to Metal and Oxidizing Metallic Iron to Oxides and Application of This Rule to Rapid Determination of Fe_{met}, Fe^{2+}, and Fe^{3+} in Iron Powders 109
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FEDOROV, A. A., (Novyye metody analiza metallicheskikh poroshkov i shlakov), Moscow, "Metallurgiya" Press, 1971.

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Phytology

USSR UDC 581.192.7+632.954:581.2

SMIRNOV, Yu. S., FEDOROV, Al. A., and SHKOL'NIK, M. Ya., Botanical Institute imeni V. L. Komarov of the Academy of Sciences, USSR Leningrad

"Teratological Changes in Plants Induced by Large Doses of Growth Stimulators and Herbicides and Their Biochemical Mechanisms"

Leningrad, Botanicheskiy Zhurnal, Vol 56, No 5, 1971, pp 633-646

Abstract: This article briefly reviews the literature on the teratological changes which are induced in plants by high concentrations of growth stimulators and herbicides. The diverse structural abnormalities which occur involve both vegetative and reproductive organs and appear to be associated with disruption of the normal course of mitosis and a significant increase in the activity of ribonucleases. The authors' experiments on the effects of the growth stimulator heteroauxin and the herbicides 2.4-diclorphenoxyacetic acid and maleic acid hydrazide are described. On the basis of experimental and literature data it is concluded that teratological changes are the result of disruption of cell division, which in turn is caused by: degradation of nucleoli; disruption of biosynthesis of DNA and changes in DNA; disturbances in the fine structure of chromatin; and disruption of the synthesis of specific

USSR

SMIRNOV, Yu. S., et al., Botanicheskiy Zhurnal, Vol 56, No 5, 1971, pp 633-646

proteins, including the synthesis of the enzymes which catalyze polymerization of the structural proteins of the protoplasm and nucleus. Formative changes may also be the result of disruption of the bond of a complex of DNA-histons, which leads to the loss of the cell's capacity to control the genetic apparatus. It is possible that this type of change takes place when the teratological changes are of a hereditary nature.

2/2

1/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--MECHANISM OF THE ACTION OF SALTS DURING THE SYNTHESIS OF AROMATIC POLYAMIDES IN AMIDE SALT SYSTEMS -U-
AUTHOR-(04)-FEDOROV, A.A., SOKOLOV, L.B., ZLATOGORSKIY, M.L., GRECHISHKIN, V.S.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN. SER. B 1970, 12(3), 205-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, POLYAMIDE COMPOUND, MOLECULAR WEIGHT, NMR, LITHIUM COMPOUND, MAGNESIUM CHLORIDE, ALUMINUM CHLORIDE, ZINC CHLORIDE, STRONTIUM CHLORIDE, CADMIUM CHLORIDE, ELECTRONEGATIVITY, AMIDE, HYDROGEN BONDING, PROTON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0316 STEP NO--UR/0460/70/012/003/0205/0208

CIRC ACCESSION NO--AP0111510
UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70
CIRC ACCESSION NO--AP0111510

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTERACTIONS OF THE METAL SALTS LICL, LIBR, LII, LINO SUB3, LISCN, MGCL SUB2, ALCL SUB3, SRCL SUB2, ZNCL SUB2, AND CDCL SUB2 AND HCL WITH BENZANILIDE (I) IN ACNME SUB2 SOLNS. AND THE INFLUENCE OF THE SALTS ON THE MOL. WT. OF POLY(P,PHENYLENETEREPHTHALAMIDE) (II) SYNTHESIZED IN ACNME SUB2 SOLNS. WERE STUDIED BY A HIGH RESOLUTION NMR METHOD. CHEM. SHIFT INCREMENTS OF I AMIDE PROTONS DECREASED IN THE ORDER OF DECREASING ELECTRONEGATIVITY OF THE LI SALT ANIONS TO 0 AND THEN INCREASED IN THE ORDER OF INCREASING ELECTRONEGATIVITY OF THE CATIONS OF THE OTHER SALTS. DECREASES IN I SOLY. FOLLOWED THE SAME ORDER OF DECREASING LI SALT ANION ELECTRONEGATIVITY. APPARENTLY, THE STRONGER THE H BONDS BETWEEN SALT ANIONS AND AMIDE GROUP PROTONS, THE GREATER IS I SOLY. AND THE FARTHER DOWNFIELD THE AMIDE PROTON SIGNAL. THE SIZE OF THE CHEM. SHIFT OF THE AMIDE PROTONS CAUSED BY DIFFERENT SALTS INCREASED LINEARLY WITH INCREASING MOL. WT. OF II SYNTHESIZED IN ACNME SUB2 IN THE PRESENCE OF THESE SALTS. PRESUMABLY, INCREASED INTERACTION BETWEEN SOLVENT AND POLYMER PROMOTED HIGHER MOL. WTS.

UNCLASSIFIED

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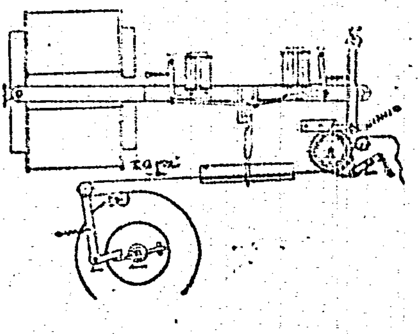
SKLYANNOY, A. L., et al., Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 12, 1970, Author's Certificate No 267190, filed 20 Nov 67, p 119



USSR UDC: 535.34

MAKHANEK, A. G., KOROL'KOV, V. S., and FEDOROV, A. F.

"Two-Photon Absorption in Molecules"

Minsk, Zhurnal Prikladnoy Spektroskopii, No 6, 1973, pp 1007-1014

Abstract: This article is the continuation of an earlier paper published in the journal named above by the first-named author (16, 1972, p 699) in which it was shown that the use of analytic methods of multiquantum processes for computing the various spectroscopic characteristics of atoms, excitons, and molecules was simple and effective. The present article considers an analytic solution for the problem of two-photon absorption of heteronuclear two-atom molecules described by the Kratzer and Morse potentials. It is assumed that the absorption occurs without a change in the basic electron term. On the basis of formulas obtained for the Morse potential, the cross section of the two-photon resonance absorption of light for the HCl molecule is computed. This value is found to be in close agreement with that computed by the authors using semi-empirical values for the matrices of dipole moment elements. They thank P. A. Apanasevich for his comments on the results of the work.

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1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--DETERMINATION OF METHANOL IN ALCOHOL RAW MATERIAL AND RECTIFIED ALCOHOL USING THE GAS CHROMATOGRAPH KHT,63 KI -U-

AUTHOR-(02)-MILYAKOV, V.T., FEDOROV, A.F.

F

COUNTRY OF INFO--USSR

SOURCE--FERMENT. SPIRIT. PROM. 1970, 36(2), 36-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--METHYL ALCOHOL, GAS CHROMATOGRAPH, CHROMATOGRAPHIC ANALYSIS/(U)KHT63KI GAS CHROMATOGRAPH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1377 STEP NO--UR/0071/70/036/002/0036/0037

CIRC ACCESSION NO--AP0135051

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0135051

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MEOH IS QUANT. MEASURED BY CHROMATOG. ON POLY,(ETHYLENE GLYCOL) OF MOL. WT. 300. THE MATERIAL WAS ANALYZED (COLUMN TEMP. 50DEGREES) AS IT CAME FROM THE EVAPORATOR WHICH OPERATES AT 110-150DEGREES. USED IN PLANTS IN WHICH BEETS WERE FERMENTED IT WAS FOUND THAT THE MAX. RELATIVE ERROR WITH RESPECT TO THE CALIBRATIONS WHICH WERE DONE WITH PURE MEOH MIXTS. WAS 1.4PERCENT, THUS, THE ACCURACY IS SUFFICIENT FOR TECHNOL. CONTROL WORK. FACILITY: VORONEZH. TEKHNOL. INST., VORONEZH, USSR.

1/2 013 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--OXIDATIVE REGENERATION OF A PLATINUM REFORMING CATALYST -U-

AUTHOR-(05)-MASLYANSKIY, G.N., IVANYUKOV, D.V., KAMINSKIY, E.F., FEDOROV, A.P., SHIPIKIN, V.V.

COUNTRY OF INFO--USSR

F

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3) 5-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYST REGENERATION, PLATINUM, HYDROCARBON COMBUSTION/(U)AP64 CATALYST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1492 STEP NO--UR/0065/70/015/003/0005/0008

CIRC ACCESSION NO--AP0112486

UNCLASSIFIED

CIRC ACCESSION NO--AP0112486

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO MINIMIZE THE LOSS OF CL IN PT-AL SUB2 O SUB3 CATALYST AP64 PROMOTED WITH CL, THE SYSTEM WAS EVACUATED TO 50-60 MM BEFORE REGENERATION. DURING REGENERATION, H SUB2 O FORMED WAS REMOVED FROM THE CIRCULATING GASES. THE DURATION OF THE 1ST REGENERATION STEP OF HYDROCARBON COMBUSTION WAS GREATLY REDUCED. THE AMT. OF H SUB2 O FORMED DURING REGENERATION WAS THUS DECREASED.

1/2 041 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--PREPARATION OF GASOLINE WITH AN OCTANE NUMBER OF 95 IN AN INDUSTRIAL CATALYTIC REFORMING PLANT -U-

AUTHOR--IVANYUKOV, D.V., KAMINSKIY, E.F., MASLYANSKIY, G.N., FEDOROV, A.P., SHAPIRO, R.N.

COUNTRY OF INFO--USSR

F

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3), 1-5

DATE PUBLISHED-------70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--GASOLINE, FUEL OCTANE RATING, CATALYTIC CRACKING, ALUMINUM OXIDE, OXIDE CATALYST, PLATINUM CATALYST, HIGH PRESSURE EFFECT, CHEMICAL REACTION RATE, CHLORINE, PETROLEUM CATALYTIC REFORMING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/2042 STEP NO--UR/0065/70/015/003/0001/0005

CIRC ACCESSION NO--AP0109974

ZZZZZZZZZZZZ UNCLASSIFIED

CIRC ACCESSION NO--AP0109974

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROCESS AND THE PLANT WERE MODERNIZED BY USING PT-AL SUB2 O SUB3 CATALYST PROMOTED WITH CL INSTEAD OF F, WHOSE ACTIVITY WAS MAINTAINED BY ADDN. OF ORG. CL COMPDS. IN THE REACTION ZONE. A GREATER AROMATIZATION OF THE PARAFFINIC STOCK WAS REACHED AS THE AMT. OF H SUB2 O IN THE REACTION ZONE WAS REDUCED BY EVAPG. THE WATER FROM THE HYDROFINED GASOLINE STOCK AND DRYING THE RECYCLE GASES WITH MOL. SIEVES. A PRESSURE DECREASE TO 20 ATM INCREASED THE YIELD OF GASOLINE WITH RESEARCH OCTANE NO. 95. A 3RD STAGE REACTOR WAS ADDED, DISTRIBUTING THE CATALYST IN THE QUANT. RATIO 1:2:4 IN THE 3 REACTORS, RESP.

USSR

STEKOL'SHCHIKOV, Ye. V., FEDOROV, A. S., Teploenergetika, No. 7, Jul 72, pp 83-85

gas-liquid medium t, the probability density of the distribution of a volume of the gas phase in terms of bubble diameters (from photographic studies of the medium), the average volume concentration of gas within the interferometer ϕ, the coordinate of the microphone x, the amplitude of the pressure of the fluctuating standing sound wave A at points x = const as a function of the time τ, and the frequency of the monochromatic sound radiation f. The relative error of measurement of these parameters did not exceed the following: temperature 0.5%, smallest diameters of bubbles 20%, greatest diameters 6%, average gas concentration ϕ 7%, x-coordinates 0.3%, generator frequencies f 0.1% and amplitude of the standing wave A 1%. The mean-square deviation of the amplitude in many cases exceeded 50% of its mathematical expectation, indicating the considerable dimensions of fluctuations in the amplitude of the acoustical pressure. Fluctuations in the amplitude of the pressure at the point x = const are attributed to the following reasons: nonuniform yield of bubbles from the bubble device leads to amplitude-phase modulation of the incident and reflected sound waves; continuous replacement of bubbles in the zone near the microphone and the emitter effect the stability of their acoustical
2/3

AA0043360 FEDOROV A.S. UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243962 MEMORY DEVICE comprising storage elements (C1-C6) which form one matrix, and storage elements (C7-C12) which form a second matrix. Wires (X1-X4, Y1-Y4, Y'1-Y'4) pass through the matrices. Pulse transformers (Tp1-Tp4) with cores with rectangular loops carry excitation windings and are provided with a common digit winding (W1). They are connected with the wires (X1-X4) respectively. The pulse transformers (T1-T3, T'1-T'3) are connected with the wires (Y1-&3, Y'1-Y'2) respectively.

Transformers (T1-T3, T'1-T'3) have magnetically soft cores. Their additional windings (W2-W7) are connected in series and in opposition for each transformer pair (T1, T'1; T2, T'2; T3, T'3). The additional windings (W2-W7) form a common reading winding for one digit. Excitation windings (W8-W13) for each transformer pair as above are connected in series.

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23.7.64 as 913219/26-24.FEDOROV.A.S.(9.10.69)
Bul 17/14.5.69. Class 42m. Int.Cl.G 06f.

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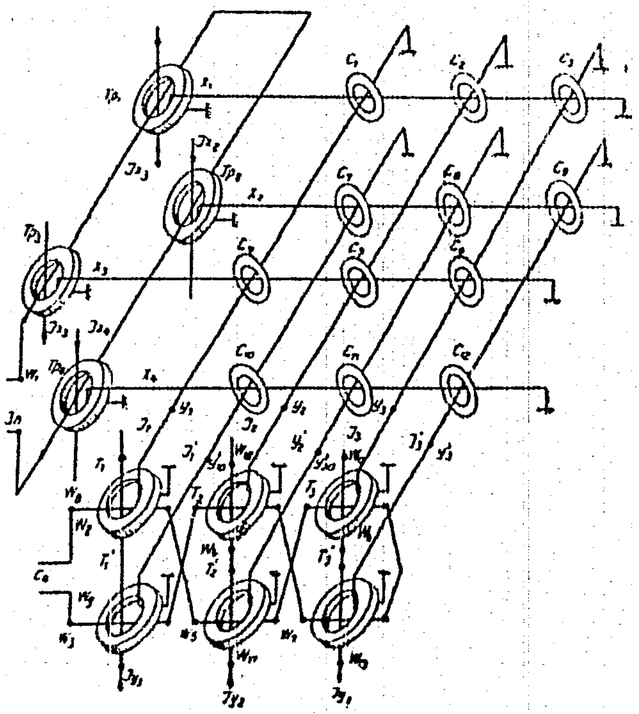

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USSR

DUBOVITSKAYA, R. K., KULAKOVSKAYA, V. P., ROMANOVSKAYA, L. H., SAVCHENKO, T. A., STOLYAROV, G. K., FEDOROV, A. T., FEL'DMAN, L. S.

Sistema Avtomaticheskoy Obrabotki Dannykh na Baze Yazyka KOBOL (Automated Data Processing System Based on COBOL), Moscow, Statistika Press, 1971, 280 pp

Translation of Forword [pp 3-4]: In the improvement of the efficiency of national production, the most important role belongs to further introduction of computers into the sphere of economics. Progress in this area is determined to a great extent by the presence of automatic data processing systems for economics information based on algorithmic languages available to a broad circle of people dealing in the given area.

The automatic data processing system described in this book for the Minsk-22M computer (SAOD) is based on a Russian version of COBOL (Common Business Oriented Language), the business information processing language which is widespread abroad. The given system was developed at the Minsk design office of the plant imeni S. Ordzhonikidze with the participation of the Mathematics Institute of the Belorussian SSR Academy of Sciences, and it is the first system using COBOL for [illegible] in the [illegible] of the language and translat[illegible] of algorithmic economic [illegible] ([illegible]) of [illegible]

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UBOVITSKAYA, R. K., et al , Sistema Avtomaticheskoy Obrabotki Dannykh na Baze Yazyka KOBOL, Moscow, Statistika Press, 1971, 280 pp

Cooperation of the Academies of Sciences of the Socialist Countries were used.

The book is devoted to a description of the SAOD system and its components from the point of view of the user. The system consists of writing the program in the initial language, preparing the programs and data for computer input, translation and checkout of the working program during computations by the finished working program and also during special system servicing procedures.

Accordingly, the book contains information required by programmers and computer operators, a description of the equipment for preparing the data, and data required by people responsible for organizing the operation of the SAOD system as a whole. In addition, the book can be useful to developers of programming and data processing systems. It is assumed that the reader is acquainted with the principles of automatic programming and the application of computers in data processing problems.

[illegible] practical guide, the reader should also be acquainted [illegible] on the software system for the Minsk-[illegible] [illegible].

1. [illegible] ( ) computer in [illegible]

ISOVITSKAYA, R. K., et al., Sistema Avtomaticheskoy Obrabotki Dannykh na Baze Yazyka KOBOL, Moscow, Statistika Press, 1971, 280 pp

Programs Library. Minsk, Mathematics Institute of the Belorussian SSR Academy of Sciences, 1968.

2. Software of the Minsk-2 (22) computer in the T mode. No 3. Symbolic coding system. Minsk. Mathematics Institute of the Belorussian SSR Academy of Sciences, 1969.

The authors consider it necessary to note that the success in using SAOD, just as any modern automatic data processing system, depends to a great extent on the clarity of organization of the operations with respect to its utilization within the framework of the general enterprise control system.

In addition to the authors, the following people participated in the development of the system at various stages: V. I. Gorbatsevich, M. L. Gruzdova, V. A. Doroshek, L. A. Kozyabo, M. Ye. Nemenman, L. I. Panchina, V. N. Pionov, M. S. Presman, V. M. Skripnikova, et al.

The authors express their sincere appreciation to all who were of assistance in preparing this paper for publication, and they will be grateful to the [illegible] of the SAOD system for comments, remarks, and suggestions.

USSR UDC 539.214;539.374

DROZD, M. S., FEDOROV, A. V.

"Calculation of the Parameters of the Elastic-Plastic Impression of a Sphere"

V sb. Issled. i kontrol' mekhanich. svoystv materialov nerazrushayushch. metodami (Studies and the Control of Mechanical Properties of Materials by Nondestructive Methods -- Collection of Works), Volgograd, 1972, pp 22-25 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V478)

Translation: It is shown that elastic restoration of an impression in the case of an elastic-plastic contact of a sphere with a plane face of a body is determined not only by the contact load, the radius of the sphere and the elastic properties of the material of the contacting bodies (as in the case of purely elastic contact), but also depends on the degree of the development of the plastic deformation (depth of the impression) in the contact zone, i.e., on the hardness of the material being tested.

USSR UDC 620.178.152.42

DROZD, M. S., FEDOROV, A. V., and VOLYNOV, A. N., Volgograd Polytechnic Institute

"Determination of Rockwell Hardness of Metals on Specimens with Curved Surface"

Moscow, Zavodskaya Laboratoriya, No 4, 1973, pp 456-459

Abstract: A system developed for measuring Rockwell hardness directly on the curved surface of a specimen is based on the method developed by A. N. Monoshkov et al., (Metallurgiya, No 13, 1971, p 118), for cylindrical surfaces and expanded for the case of curved surfaces when both curvatures are different from zero. A simple formula is derived for the determination of the standard hardness number HRB by the hardness number HRB' measured on the curved surface. The reliability of the formula was experimentally proved on specimens of various materials with convex and concave spherical and cylindrical surfaces. The correlation of standard and calculated HRB values derived in testing spherical and cylindrical surfaces in both cases revealed correlation coefficients of 0.95. Four figures, two tables, seven formulas.

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USSR

UDC 621.375.4+62-83

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GLUKHAREV, A. A., DOROSHKEVICH, Ye. M., POTAPOV, A. A., FEDOROV, A. V., FILATOV, G. I.

"A Power Amplifier"

USSR Author's Certificate No 321916, filed 19 Sep 70, published 24 Jan 72 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 9, Sep 72, Abstract No 9A81 P)

Translation: As a distinguishing feature of the proposed power amplifier, operational reliability is improved by adding a DC correcting link connected between a phase-insensitive rectifier and a transistorized controlled resistor. One illustration. V. T.

1/1

Automatic Control: Instruments

USSR

UDC: 621.317:681.26

VIKTOROV, V. A., Doctor of Technical Sciences, LUNKIN, B. V., Candidate of Technical Sciences, VOSTRIKOV, I. S., Engineer, FEDOROV, A. V., Engineer

"A Resonance Volume Gauge for Liquids and Dry Pourable Materials"

Moscow, Pribory i Sistemy Upravleniya, No 4, Apr 72, pp 26-27

Abstract: The paper describes a new method of volume measurement developed at the Institute of Problems of Control in Moscow. The procedure is based on using the resonance properties of electromagnetic systems with distributed parameters. The resonance frequency of such a system is an indirect parameter which characterizes the amount of material contained in the system. The pickup is made in the form of a continuous thin line uniformly distributed throughout the volume of the vessel whose contents are to be measured. The resonance frequency of the system formed by the line and the metal walls of the vessel is independent of the distribution of material filling the vessel. Expressions and curves are given for the resonance frequency of the system as a function of relative volume (the ratio of the volume of material to the volume of the vessel). Measurement error is ±1%. A block diagram of the volume gauge is shown in the figure.

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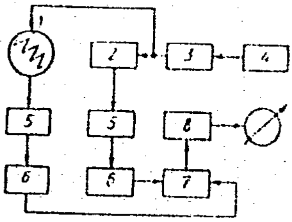
USSR

VIKTOROV, V. A. et al., Pribory i Sistemy Upr., No 4, 1972, pp 26-27



1--pickup; 2--reference tank circuit; 3--high-frequency wobbulator; 4--low-frequency square pulse generator; 5--detector; 6--shaping stage; 7--flip-flop; 8--integrating circuit

USSR

UDC: 539.374

DROZD, M. S. and FEDOROV, A. V.

"Investigating the Depth of a Riveted Layer and the Intensity of Plastic Deformation in an Impressed Spherical Die of Arbitrary Curvature"

V sb. Povysh. prochnosti i dolgovechnosti detaley mashin poverkhnostn. plastich. deformir. TsNIITMASH, 90 (Improving the Durability and Life of Machine Parts in Surface Plastic Deformation, Central Scientific Research Institute of Heavy Machinery, 90--collection of works) Moscow, 1970, pp 224-233 (from RZh-Mekhanika, No. 8, Aug 70, Abstract No. 8V468)

Translation: Let h be the depth of the residual imprint and d its diameter, D is the diameter of the indentor, h_s is the depth of the riveted layer. It is assumed that for various materials and indentors there is a universal dependence of the ratio h_s/h on d/D. It has the form of $h_s/h = 5.5D/d$. The experimental verification of this formula for various materials and for 10 mm $< D <$ 50 mm has shown good results for static as well as dynamic loading

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USSR

DROZD, M. S. and FEDOROV, A. V., V sb. Povysh. prochnosti i dolgovechnosti detaley mashin poverkhnostn. plastich. deformir. TsNIITMASH, 90, 1970, pp 224-233

under the condition that the shock velocity be no more than 10 m/sec. The error is no more than 10%. It is shown that the magnitude, of d/D is not purely a conditional parameter but is a quantitative characteristic of the intensity of plastic deformation at the center of the spherical imprint.

B. A. Druyanov

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USSR

UDC: 621.373.51

ANDREYEV, V. S. and FEDOROV, A. Ya.

"Computing Tunnel Diode Microwave Oscillators from Operating and Load Characteristics"

Moscow, Radiotekhnika, Vol. 26, No 2, 1971, pp 45-53

Abstract: This article, read at the Sixth Inter-VUZ Conference on UHF Electronics in 1969, is a continuation of an earlier paper published by the first-named author above (Radiotekhnika, Vol. 25, No 7, 1970). The authors apply the method of that paper to the computation of uhf oscillators using tunnel diodes, the general approach that of drawing the load lines on the circular diagram representing the operating characteristics of the oscillator, as is customarily done for electronic oscillators of the magnetron type. To determine the steady-state modes of the oscillator, a parallel equivalent circuit is analyzed. In this circuit, the tunnel diode is replaced by an admittance, with all other circuit components replaced by the total load admittance. The stability of the steady state is analyzed, and examples of the use of the method for practical circuits are given. The authors express their gratitude to I. A Popov, who suggested that this work be done.

1/1

1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--THEORY OF SMALL ANGLE X RAY SCATTERING OF COMPACT MACROMOLECULES IN
SOLUTION. BRANCHED GAUSSIAN CHAINS -U-
AUTHOR--FEDOROV, B.A.

COUNTRY OF INFO--USSR

F

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 816-21

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MOLECULAR STRUCTURE, X RAY ANALYSIS, MACROMOLECULAR CHEMISTRY,
X RAY SCATTERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1265 STEP NO--UR/0459/70/012/004/0816/0821

CIRC ACCESSION NO--AP0134939
UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0134939

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANAL. METHOD WAS PROPOSED FOR DETG. 2 IMPORTANT CHARACTERISTICS OF BRANCHED GAUSSIAN CHAINS (AV. DIMENSIONS OF THE WHOLE MACROMOL. AND AV. DIMENSIONS OF A BRANCH) FROM THE INDICATRIX OF SMALL ANGLE SCATTERING OF X RAYS (H. BENOIT, 1953) DERIVED FROM A COMBINED ANAL. OF THE MEAN SQUARE RADIUS OF GYRATION AND THE LOCATION OF THE MAX. OF THE GRAPH I(MU)MU PRIME2 VS. MU (WHERE I(MU) IS THE SCATTERING INTENSITY AT AN ANGLE 2THETA, AND MU EQUALS (4PI-LAMBDA)SINTHETA). THE THEORY DEVELOPED IS APPLICABLE TO HIGHLY BRANCHED QUASILINEAR CHAINS. FACILITY: INST. BELKA, PUSHCHINO-ON-OKA, USSR.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--THEORY OF SMALL ANGLE X RAY SCATTERING OF COMPACT MACROMOLECULES IN SOLUTION. ELLIPSOIDS OF ROTATION AND LINEAR GAUSSIAN CHAINS -U-

AUTHOR--FEDOROV, B.A.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 810-15.

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHYSICAL CHEMISTRY PROPERTY, MOLECULAR STRUCTURE, STEREOCHEMISTRY, X RAY ANALYSIS, MACROMOLECULAR CHEMISTRY, GAUSSIAN DISTRIBUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1384 STEP NO--UR/0459/70/012/004/0810/0815

CIRC ACCESSION NO--AP0135058
UNCLASSIFIED

CIRC ACCESSION NO--AP0135058
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANAL. METHOD WAS PROPOSED FOR
THE DETN. OF GEOMETRIC PARAMETERS OF COMPACT MACROMOLS. IN SOLN.
(SIMULATED BY ELLIPSOIDS OF ROTATION) FROM X RAY SCATTERING CURVES IN
I(MU) (MU PRIME2) VS. MU COORDINATES (I(MU) IS THE SCATTERING INTENSITY
AT ANGLE 2 THETA; MU EQUALS (4 PI-LAMBDA)SIN THETA, AND LAMBDA IS THE
WAVELENGTH). THE I(MU)MU PRIME2 VS. MU CURVE PLOTTED FOR LINEAR
GAUSSIAN CHAINS HAVING INTRAMOL. ATTRACTION HAD A MAX. WHICH OFFERED A
MEANS TO DET. THE DEGREE OF ATTRACTION. FACILITY: INST. BELKA,
PUSHCHINO-ON-O-KA, USSR.

UNCLASSIFIED

Biochemistry

SECTION IV

Sci Selected Abstracts [illegible]
[illegible]
PCS-99
June 1971

16

Name: Protein Research Institute, Pushchino

Description:

(U) During this quarterly reporting period, two new articles were located from the Protein Research Institute at Pushchino. On the basis of one of the articles, which dealt with escherichia coli ribosomes, it was possible to associate one new person, N. I. Smirnov, with the institute(12). The other article, also on escherichia coli, was issued jointly from the Institute of Genetics and Selection of Microorganisms, Moscow, and the Protein Research Institute at Pushchino(33). Previous articles by V. I. Frisogorov have been issued from the former institute. No previous facility association could be located for V. D. Vasil'yev, but it is likely that he represents the latter institute. This article probably represents some joint work between the two institutes.

(U) As a ready source of reference, given below is a complete listing of personalities identified with the Protein Research Institute to the present time:

[illegible]

Beletsina, N. V.
Bershteyn, T. M.
Chirgadze, Yu. M.
Fedorov, B. A.
Finkel'shteyn, A. V.
Glinskaya, O. V.
Lavrilova, L. P.
Mitin, Yu. V.

Privalov, P. L.
Ptitsyn, O. B.
Rashevskaya, Ye. P.
Serdyuk, I. N.
Smirnov, N. I.
Spirin, A. S.
Tiktopulo, Ye. I.
Vasil'yev, V. D.

UNCLASSIFIED

FEDOROV, B. A.

Acc. Nr: AP0045619 Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1, pp 69-75

STUDIES OF TOBACCO MOSAIC VIRUS BY SMALL-ANGLE X-RAY DIFFUSION SCATTERING

B. A. FEDOROV

Institute of Protein Research, Academy of Sciences, USSR, Poustchino-on-Oka

The function of radial distribution of TMV electron denstiy has been obtained on the basis of earlier developed theories of small-angle X-ray scattering for inhomogeneous isolated cylinders in solution. The results of the calculation are in good agreement with the data on TMV direct X-ray analysis. The problem of extrapolation of the experimental curve is analyzed.

REEL/FRAME

19780596

1/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--ELECTRICAL CHARACTERISTICS OF THE SYSTEM ROCK ICE -U-

AUTHOR-(04)-BOGORODSKIY, V.V., KHOKHLOV, G.P., FEDOROV, B.A., TREPOV, G.V.

F

COUNTRY OF INFO--USSR

SOURCE--AKAD. NAUK SSSR DOKLADY, V. 190, NO. 1, PP. 88-90 ILLUS., TABLE, 1970
DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--ROCK, ICE, PERMAFROST, RADIO WAVE ABSORPTION, RADIO SIGNAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1998 STEP NO--UR/0020/70/190/001/0088/0090

CIRC ACCESSION NO--AT0133833
UNCLASSIFIED